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Copper(II) Complexation with Chloride Ions in the Water-Dimethyl Sulfoxide and Water-Dimethylformamide Binary Systems

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Abstract

The stoichiometry, accumulated fractions and formation constants of the chloro complexes Cu 2+-Cl --DMSO(DMF) - H 2O, as well as the Gibbs energies of transfer of the chloro complexes from water into water-DMSO and water-DMF mixtures, are determined. The proton magnetic relaxation method is used in combination with mathematical modeling of complex equilibrium systems at different compositions of the water-dimethyl sulfoxide and water-dimethylformamide binary solvents. The stoichiometry and formation constants of these complexes are shown to depend on the solvating properties of components of these binary solvents with respect to the copper(II) cation and the chloride ion.